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STATE FOR OES/IHB, OES/SAT, OES/PCI AND OES/EGC
STATE FOR EAP/K, ISN/NESS AND STAS
STATE PASS TO EPA FOR INTERNATIONAL PROGRAMS
WHITE HOUSE FOR OSTP AND CEQ
DOE FOR INTERNATIONAL, NE, FE, AND EERE
USDOC FOR 4400/MAC/EAP/OPB/ITA/TA
USDOC FOR NIST
HHS FOR OGHA
HHS PASS TO NIH FOR FIC
STATE PASS TO NSF FOR INTL PROGRAMS
STATE PASS TO NRC FOR INTL PROGRAMS

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SUBJECT: SEOUL ESTH UPDATE - DECEMBER 2009

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Energy and Environment

South Korea Signs Nuclear Energy Deal
with United Arab Emirates

1. President Lee witnessed the signing of a contract December 27 that will award USD 20 billion to a South Korean consortium led by the Korea Electric Power Corporation (KEPCO) to supply four 1400 megawatt light water nuclear reactors and design and build four

nuclear power plants in the United Arab Emirates (UAE). The consortium is expected to earn another USD 20 billion through joint operation of the plants over the next 60 years. Work on the plants is expected to begin in 2012 with the first plant completed by 2017 and the other three plants completed by 2020. The Emirates Nuclear Energy Corporation chose Korea's bid over a competing bid by a French consortium led by Areva SA and a joint U.S./Japanese proposal by GE/Hitachi. A Ministry of Knowledge Economy representative told the press that construction and operation of the four reactors and plants is expected to create more than 100,000 Korean jobs over the next several years.

12. The UAE deal is an important early success as Korea attempts to capitalize on the global renaissance in nuclear power plant construction. In February, Doosan Heavy Industries exported a 500 megawatt pressurized light water reactor to the China National Nuclear Corp. In August, KEPCO and Nuclear Power of India Ltd. signed an agreement to study the feasibility of licensing Korean reactors and constructing Korean plants in India. Korea is competing with France, Canada and Russia for construction of a 1000 megawatt nuclear power plant near the city of Aqaba. KEPCO is also discussing the possible construction of two nuclear power plants in Turkey and is planning to bid on a contract for a nuclear plant in the Ukraine. Korea's success in winning the UAE bid could signify the Korean nuclear industry's competitiveness in price, construction experience, and safety.

Graduate School for Nuclear Power
Studies to Open in Korea

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13. On December 29, Korea's Ministry of Knowledge Economy approved a plan by KEPCO to establish the world's first international graduate school for nuclear power studies. The International Nuclear Graduate School (INGS), scheduled to open March 2012, will be established next to the Kori Nuclear Power Plant Complex, about 60 km northeast of Busan, which will allow students easy access to on-the-job-training and practical learning experiences. Courses will include nuclear energy planning, design, operations, management, and maintenance. The two-year graduate school will accept 100 students in each graduating class - half of them will be non-Korean students selected from countries that are potential importers of Korean nuclear reactors and power plants. The UAE has already stated it will send ten of its nuclear plant workers to the school. Much of the 58 billion won (USD 48 million) funding for the school will come from KEPCO and its four affiliates - Korea Hydro & Nuclear Power (KHNP), Korea Power Engineering Company, Korea Plant Services & Engineering, and Korea Nuclear Fuel.

14. The school is one element of Korea's systematic and long-term effort to become a leading exporter of nuclear energy reactors and of construction for nuclear power plants. Yun Jung-hyun, team leader of the KEPCO-INGS task force, told the Korea Herald on December 30, "Raising talents from potential export countries such as Turkey, Jordan, Vietnam and Indonesia will produce valuable networks we need in the future."

Nuclear Energy Clauses Deleted from Draft Bill of
Korea's Basic Law on Low-Carbon and Green Growth

15. On December 7, the National Assembly's Climate Change Special Committee approved the "Basic Law on Low-Carbon Green Growth," after deleting clauses that would set in law plans to expand the number of Korea's nuclear power plants from the current 20 to 37 by 2030. The bill now can be presented to the National Assembly's plenary session for final voting and approval. In deleting the provisions pertaining to nuclear energy, legislators reportedly acted in cognizance of environmental and safety concerns by civic groups. Notwithstanding the lawmakers' actions, the Lee Myung-bak Administration still plans to carry out its nuclear energy expansion program; however, those plans will now lack the force of law. Members of the domestic nuclear energy community worry that without enacting legislation, it will now be more difficult to secure future

nuclear power plant sites.

¶6. The Lee administration submitted the draft legislation to the National Assembly in late February. Key points of the bill were the expansion of the nuclear energy industry through construction of additional reactors and power plants, the introduction of a market-based cap-and-trade system on domestic carbon emissions, increased R&D into renewable energy technologies, and a series of eco-friendly infrastructure projects (the Green New Deal) designed to create nearly one million jobs.

South Korea to Launch Global Climate Change Institute

¶7. In his December 16 keynote address at the Copenhagen climate conference, President Lee Myung-bak announced plans to launch an international institute early next year to spearhead global efforts

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to fight climate change and also help provide developing countries with mitigation plans and necessary technology. The institute, tentatively named the Global Green Growth Institute (GGGI), "can act as a global think tank and bridge between advanced and developing countries," the South Korean leader said. The Office of the President announced on December 17 that the institute will be established in South Korea in the first half of next year and at least five branch offices will be opened in advanced and developing countries before the end of 2012 jointly funded by the host countries. The institute will bring together the world's top scientists and climate experts to come up with what Lee called "workable solutions" to environmental problems.

Ministry of Knowledge Economy Says Carbon Emissions Reduction Plan Will Slow GDP Growth

¶8. South Korea's 2020 reduction target of carbon emissions by four percent below 2005 levels would cause the country's per-capita GDP to fall if implemented, a government report said on December 10. The joint report by the Ministry of Knowledge Economy (MKE), Seoul National University and the Korea Productivity Center forecast the national economy could grow an average 3.65 percent annually from 2005 through 2020. The report noted, however, that if the country moves to mitigate greenhouse gas emissions in accordance with the plan outlined by the Presidential Committee on Green Growth, the GDP growth would be reduced 0.4 percentage points to 3.25 percent in the cited period.

Science & Technology

Korean Scientists Make Breakthrough in Bio-Plastics Production

¶9. A team of Korean scientists from LG Chem and the Korea Advanced Institute of Science and Technology (KAIST) have developed a more efficient and cost-effective method to produce bio-plastics. The research focused on Polylactic Acid, a bio-based alternative to petroleum-based plastics such as the polyethylene and polystyrene used in every-day household items and fabrics such as grocery bags, styrofoam cups, and polyester clothing. Polylactic Acid is bio-degradable and lower in toxicity than fossil-fuel based plastics. Bio-plastics currently comprise only about 0.2 percent of global plastics use because the cost of production has been more expensive than producing plastics from fossil-fuel based chemicals. Until now, Polylactic Acid has been produced in a two-step fermentation and chemical process. The Korean team used a genetically engineered strain of the common bacterium E. coli to develop an efficient one-step production process. The new process is 40 percent less costly than the two-step process, which could make bio-plastics cost competitive with petroleum-based plastics at about USD 50 per barrel of oil.

LG to Begin Crystalline Silicon

Solar Cell Production in January

¶10. LG Electronics announced December 22 that it will start

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manufacturing crystalline silicon solar cells in January. The company has invested 220 billion won (USD 187 million) to complete two solar cell production lines, each capable of producing more than half a million 1.0 by 1.6 meter solar panels containing cells with 120 megawatt capacities - enough solar cells to produce electricity for approximately 40,000 families for one year. While thin-film cells are becoming more popular due to their flexibility, crystalline cells continue to be more efficient in light-to-energy conversion. LG expects crystalline silicon solar cells to comprise about 80 percent of the global solar cell market in coming years.

Korea to Build Nuclear Research Reactor in Jordan

¶11. A Korean partnership consisting of the state-run Korea Atomic Energy Research Institute (KAERI) and Daewoo Engineering and Construction has been selected after an international bidding round as the preferred group to build a 5-megawatt research reactor inside the Jordan University for Science and Technology by 2014, the Ministry of Education, Science and Technology said on December 4. KAERI has been operating its 30-megawatt research reactor "HANARO," or High-flux Advanced Neutron Application Reactor, since 1995 and has been seeking export markets in the past several years. He announcement took place just three weeks before Korea signed a deal with the United Arab Emirates to construct and operate four full-scale 1400 megawatt light water nuclear power plants in the UAE.

Domestic Scientists Develop New Species of Rice

¶12. Yonhap news reported on December 9 that a team led by Ryu So-noh, an agricultural science professor at Korea National Open University has developed a new strain of rice that has a high concentration of cyaniding 3-glucoside (C3G), which is gaining recognition as a beneficial food supplement. The chemical has been shown to reduce atopic skin symptoms and help prevent diabetes. The grain also has 1.2 times normal rice's levels of anthocyanin, a flavonoid pigment with powerful anti-oxidant qualities. The research began in 2006 in cooperation with the state-run Rural Development Administration.

Health

Statistics Highlight Scale of Aging Population and Increased Cases of Dementia

¶13. According the latest Korea Statistics Almanac recently published by Statistics Korea (formerly the National Statistical Office), children under 14 made up more than 40 percent of the Korean population in 1955, but that number has declined to 16.8 percent as of the year 2009, an indication of the nation's low birthrate. In 1955, people aged over 65 accounted for only 3.3 percent of the total population, but now senior citizens constitute 10.7 percent of the population, highlighting the scale of Korea's aging population. In a separate report, the Korea Institute for Health and Social Affairs (KIHSA) said that over 45,000 Koreans were afflicted with dementia in 2009, and the number is expected to

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increase to 47,000 in 2010. With continued rapid aging of Korea's population, KIHSA predicts that the number of dementia patients will surpass one million people by 2030. Besides the personal emotional and health impacts of dementia, KIHSA says the economic costs of dementia to society will soar. Medical spending on dementia

patients jumped six-fold in the past 5 years to 303 billion won (USD 264 million), and that figure will rise along with the total number of dementia cases.

H1N1 Influenza Alert Level Is Lowered as Cases Decline

¶14. On December 10, the Korea Centers of Disease Control and Prevention (KCDC) lowered its H1N1 flu alert from "red" to "orange" as the pace of H1N1 infections has slowed in recent weeks. The country had maintained a "red" alert status since early November, but the infection rate and number of fatalities from the epidemic have been waning since peaking at the beginning of November. KCDC said that the ad hoc Central Disaster Relief and Safety Control Headquarters has also been disbanded and its emergency mission has been turned over to KCDC effective December 11. The latest KCDC data show that H1N1-related deaths in South Korea amounted 148 as of December 12. Of the 148 fatalities, 132 were classified as high risks patients (elderly or with pre-existing medical conditions). The influenza-like illness (ILI) index per 1,000 out-patients has dropped to 18.5 during the second week of December, down 59 percent from its peak during the first week of November and down 17.5 percent from the first week in December.

HIV Positive Foreign Workers File Petition for Discriminatory Measures

¶15. According to a local news report of December 2, a coalition of human rights groups and a foreign workers' association (the Migrants' Trade Union) in Korea filed a petition with the National Human Rights Commission, coinciding with World AIDS Day of December ¶1. The petition claims South Korea infringes on the human rights of foreign migrants by conducting tests for HIV on them during routine health checks without their knowledge or consent. According to South Korea's AIDS prevention law, a person's consent is required before testing for HIV. The petition also says current immigration controls discriminate against foreigners with AIDS. "Foreigners who have received work permits are deported from the country if they test positive for HIV," the petition stated, noting that over 600 foreign workers have been forced to leave Korea since the late 1980s. UN Secretary General Ban Ki-moon earlier called on South Korea's health minister to remove the country's immigration controls on foreigners with HIV, pointing out that it is one of only eleven countries in the world to impose such restrictions.

Profile

Korea Institute of Energy Research

¶16. The Korea Institute of Energy Research (KIER), located in Daejeon, central Korea, was founded in 1977 by the government and is chartered to perform basic and applied research in various energy

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technologies focusing on the nation's policy goals of "low carbon and green growth." Its R&D areas range from renewable energy technologies including solar, wind power, fuel cells, and hydrogen energy to carbon capture and storage technology, clean use of fossil fuels, energy efficiency for industry, transportation and buildings, and energy materials development. In addition, KIER advises the government on energy-related policies, such as how to meet the challenges of climate change and how to cope with the versatility of oil prices.

¶17. Currently KIER has 355 full-time employees, of which 18 researchers hold M.S. or Ph.D. degrees from a U.S. university. KIER has maintained a close relationship with the National Energy Technology Laboratory of the U.S. Department of Energy since both agencies signed an MOU on collaboration in 2007. KIER also has a working relationship with Georgia Institute of Technology and the U.S. National Renewable Energy Laboratory.

